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ABSTRACT

Developed through synthesis and review of existing task analysis literature, this guide lists tasks expected to be performed by workers in four business and office occupations and presents information for incorporating these tasks into secondary and postsecondary competency based educational programs. Task listings are presented for the following occupations: accounting, clerical occupations, data processing, and secretarial occupations. Tasks are listed by suggested instructional sequence with various program exit points noted by job title. A brief introduction and five appendixes deal with using these task lists in program development. The appendixes cover the following topics: an overview of competency based education; the relationship of duties, tasks, performance objectives, and criterion referenced measures; understanding duties, tasks, and procedural steps in competency based instruction; completers, leavers, and the concept of multiple career options (discussion of organizing a curriculum which allows students to take only a portion of an instructional sequence and still be a program completer by federal guidelines); and a model for curriculum organization. A brief bibliography follows. (MN)

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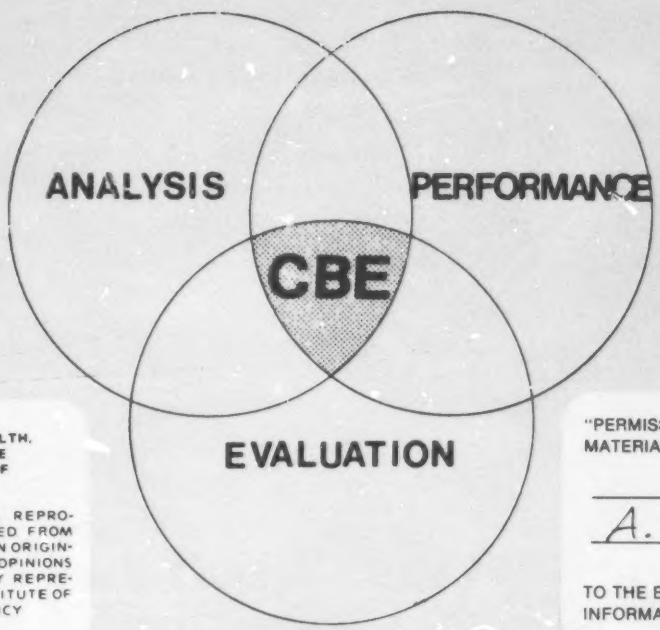
A GUIDE TO TASK ANALYSIS FOR COMPETENCY BASED EDUCATION

BUSINESS AND OFFICE EDUCATION



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Introduction

This document was developed pursuant to a grant from the Georgia Department of Education and is designed to provide the foundation data for a task-based curriculum in a number of occupational training areas. The first section and several appendices will deal with the relationships between the data presented here and the development of a performance or competency based educational program.

Resources and Methods

This material was developed through a process of synthesis and review of the existing task analysis literature. The task documents provided by the Vocational Technical Education Consortium of States (V-TECS) as cited in the bibliography provided much of the original data necessary for development of the task lists as they appear here. The validation of the task lists as truly being those performed by incumbent workers was established by this method of beginning with data that had already been through the rigid and thorough analysis of these workers employed by V-TECS. This material was presented to teams of secondary and post-secondary teachers in each curriculum area who were recommended by State Department of Education staff and selected teacher trainers and educators as being among the most competent in their area of specialization. These teams were used to organize and refine the material into the format utilized in this publication.

Uses

There are several key needs of vocational curriculum development which are attended to by the task analysis materials which follow this introduction. The uses of this material are summarized below:

1. Content Validity--By utilizing existing task analyses this project began with a series of worker tasks which had already been validated by incumbent workers in each category. The instructors who revised and modified these materials insured that the tasks as presented represent realistic instructional areas for which specific performance objectives may be written. The material is therefore both useable in the world of work and "teachable" in the typical vocational program in our state.
2. Curriculum Organization--The task lists as presented have been placed in a suggested teaching sequence. This sequence is based on the judgment of the team who prepared the list. The sequence may be altered as deemed appropriate in local situations, but it does represent a logical ordering of both duties and tasks which may be translated directly into the classroom situation.
3. Multiple Career Options--Each task list is broken down by a series of job titles within each occupational domain. These job titles are for the most part, recognized by the Dictionary of Occupational Titles and the U. S. Department of Labor. The progress from

least skill required to most skill required with necessary tasks identified for each title. These career options or "exit points" may be used to design a curriculum which is open-ended. It allows a student in any program to be declared a completer when he has demonstrated mastery of the tasks necessary for any one of the series of exit points. (NOTE: It should be mentioned that in some highly technical programs, such as Medical Technology, there are few if any recognized exit points short of the certificated level attainable only at the conclusion of the entire program. This restriction is due to the licensing requirements of these various areas.) The utilization of multiple exit points is applicable to reporting procedures required by the Management Information System of the State Department of Education. If students complete any one of the exit points it may be assumed that the student's educational objective has been met. This is consistent with Federal definitions of program completer. (See Appendix D.)

4. Delineation of Secondary and Post-secondary Programs--These task lists are organized into secondary and post-secondary expectancies in terms of exit point possibilities. Suggested exit points are given for programs at each level. The high school program could utilize the tasks associated with exit points from several of the specialized programs as the foundation for a cluster course which has well-defined competency levels and

which has specific job titles associated with it. The suggested high school exit points in no way limit the dimensions of high school training. They are only benchmarks against which secondary programs can evaluate occupational training goals in terms of real job possibilities. Each secondary program is encouraged to set realistic task-based training goals for itself.

HOW TO USE THIS BOOK

The task lists prepared here cover a number of programs and are arranged by clusters of related occupations. These are construction, drafting, electronics, health occupations, business education, electro-mechanical, food services, metals and transportation. Each list is preceded by a summary of tasks by exit point. Each cluster of lists is related to an existing high school program and each specific list represents a post-secondary program. The elements and uses of these lists are as follows:

1. Occupational Area--
   This corresponds to a specialized training program presently being taught in technical schools in Georgia. This should be used to identify task lists for curriculum development in these specific programs.
2. Related Secondary Cluster--
   This specifies the high school cluster program to which the specialized area is most logically related. This designation should be used to relate areas of high school instruction to areas of post-secondary instruction.

3. Possible Exit Points--

The exit points associated with task list begin with jobs with least skill required and progress to the highest skill required for any title. Virtually all exit points are identified by code numbers from the Dictionary of Occupational Titles. Tasks necessary for student competence in each exit point are indicated in matrix form by an X. These exit points should be used to define curriculum for programs which offer a series of career options short of the most technically demanding occupation in any area.

4. Duty Area--

All task lists are broken down in to broad functional areas of worker responbility called duties. These duties follow the format established by V-TECS and are further defined in Appendix A. Duty areas are given in a suggested sequence of instruction and should be used to form the topical outline for a course of study.

5. Task Statements--

Each task statement is phrased using V-TECS terminology. The tasks are arranged in a suggested teaching sequence. Tasks may be identified by duty area such as A-1, B-3, C-5, etc. Task statements should be used to form the performance content of a program of instruction. Individual

users are encouraged to write performance objectives and criterion measures for each task as per examples given in Appendix B.

6. Secondary Expectancy--

This element graphically identifies the tasks associated with suggested secondary exit points mentioned on the summary sheet. This designation allows for the general high school curriculum content to be rapidly identified.

SAMPLE

TASK LISTING BY DOT CODE

OCCUPATIONAL AREA (POST-SECONDARY)

1 → REFRIGERATION, HEATING & AIR CONDITIONING

RELATED SECONDARY CLUSTER ELECTRO-MECHANICS ← 3

4 → DUTY _____

*DENOTES SECONDARY EXPECTANCY

2 → POSSIBLE EXIT POINTS

TASK NO.	TASK NAME ← 5	DOT DESCRIPTION						
		AIR CONDITIONING INSTALLER DOMESTIC	AIR CONDITIONING INSTALLER HELPER	AIR CONDITIONING SERVICER WINDOW UNIT	REFRIGERATION MECHANIC	AIR CONDITIONING TECHNICIAN		
		DOT NO. 827.464-010	637.687-010	637.261-010	637.261-026	007.181-010		
	DUTY A -- Installing Domestic Air Conditioning Systems							
1	Tap, thread, and replace threads ← 6				X	X		
2	Soft and silver solder copper tubing	X	X		X	X		
3	Maintain refrigeration manifold gauges	X	X		X	X		
4	Install and use refrigeration gauges	X			X	X		
5	Use a vacuum pump	X			X	X		
6	Test refrigeration systems for leaks	X			X	X		
7	Install refrigeration accessories				X	X		
8	Charge refrigeration systems	X			X	X		
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19	Install package units (residential and mobile home)	X			X	X		

← 7

LEGEND

1. AREA TECH SCHOOL PROGRAM NAME.
2. SPECIFIC D.O.T. JOB TITLES.
3. HIGH SCHOOL CLUSTER PROGRAM NAME.
4. INDICATES TASK WHICH SHOULD BE MASTERED BY AN AVERAGE HIGH SCHOOL STUDENT.
5. BROAD AREA OF WORKER RESPONSIBILITY.
6. TASK STATEMENTS.
7. INDICATES TASK PERFORMED BY EACH JOB TITLE.

SUMMARY OF MULTIPLE
CAREER OPTIONS IN
ACCOUNTING

Secondary	-	Accounts Receivable Clerk 216.482-010
		Accounts Payable Clerk 216.482-010
		Inventory Audit Clerk 210.382-010
		Cost Clerk 216.382-034
		Payroll Clerk 215.482-010
Post Secondary	-	Accounts Receivable Clerk 216.482-010
		Accounts Payable Clerk 216.482-010
		Inventory Audit Clerk 210.382.010
		Cost Clerk 216.382-034
		Payroll Clerk 215.482-010
		Bookkeeper I 210.382-014
		Accounting Clerk 216.482-010

- Task Summary -

Accounts Receivable/Payable Clerk. Task #'s: C-1-5, D-1-8, E-1-2, F-1-5, G-1-10.

Inventory Audit Clerk. Task #'s: D-1-8, E-1-2, H-15, I-1-4, J-1-4.

Cost Clerk. Task #'s: A-1-8, B-1-3, D-1-8, E-1-2, H-1-5, I-1-4, J-1-4.

Payroll Clerk. Task #'s: D-1-8, E-1-10.

Bookkeeper I. Task #'s: B-2-3, C-1-6, D-1-8, E-1-10, F-1-5, G-1-10, I-1-4.

Accounting Clerk. Task #'s: A-1-8, B-1-3, C-1-6, D-1-8, E-1-10, G-1-10, I-1-4.

TASK LISTING BY DOT CODE

OCCUPATIONAL AREA (POST-SECONDARY) ACCOUNTING

RELATED SECONDARY CLUSTER BUSINESS EDUCATION

DUTY _____

*DENOTES SECONDARY EXPECTANCY

TASK NO.	TASK NAME	POSSIBLE EXIT POINTS: DOT DESCRIPTION	ACCOUNTING CLERK	BOOKKEEPER I	PAYRCLL CLERK	COST CLERK	INVENTORY-AUDIT CLERK	ACCOUNTS PAYABLE CLERI	ACCOUNTS RECEIVABLE CLERK
		DOT NO.	216.482-010	210.382-014	215.482-010	216.382-034	210.382-010	216.482-010	216.482-010
	DUTY A -- Prepare Financial Statements								
* 1	Balance the ledger accounts		X			X			
* 2	Prepare a trial balance		X			X			
* 3	Prepare an income statement		X			X			
* 4	Prepare a balance sheet		X			X			
* 5	Prepare a capital statement		X			X			
* 6	Prepare a worksheet		X			X			
* 7	Prepare a statement of financial position		X			X			
* 8	Prepare a retained earnings statement		X			X			
	DUTY B -- Maintain Records for Fixed Assets								
* 1	Complete fixed asset records (a subsidiary ledger) for each fixed asset		X			X			
* 2	Calculate depreciation for each fixed asset		X	X		X			
* 3	Prepare a periodic schedule of fixed assets		X	X		X			
	DUTY C -- Maintain an Accounts Receivable Ledger								
* 1	Open an accounts receivable ledger with accounts for each customer		X	X				X	X
* 2	Post credit sale invoices and account payment receipts to the accounts		X	X				X	X

TASK LISTING BY DOT CODE

OCCUPATIONAL AREA (POST-SECONDARY) ACCOUNTING

RELATED SECONDARY CLUSTER BUSINESS EDUCATION

DUTY _____

*DENOTES SECONDARY EXPECTANCY

TASK NO.	TASK NAME	POSSIBLE EXIT POINTS: DOT DESCRIPTION	ACCOUNTING CLERK	BOOKKEEPER I	PAYROLL CLERK	COST CLERK	INVENTORY-AUDIT CLERK	ACCOUNTS PAYABLE CLER	ACCOUNTS RECEIVABLE CLERK
		DOT NO.	216.482-010	210.382-014	215.482-010	216-382-034	210.382-010	216.482-010	216.482-010
* 3	Prepare monthly billing statements		X	X				X	X
* 4	Prepare a schedule of accounts receivable		X	X				X	X
* 5	Prepare debit and credit memos		X	X				X	X
* 6	Prepare a bill of sale		X	X				X	X
	DUTY D -- Maintain the Journal(s) and the Ledger								
* 1	Develop a chart of classified accounts		X	X	X	X	X	X	X
* 2	Open a general ledger and record the balances in each account		X	X	X	X	X	X	X
* 3	Analyze and record transactions in the journal(s)		X	X	X	X	X	X	X
* 4	Post to the ledger from the journal(s)		X	X	X	X	X	X	X
* 5	Balance the ledger accounts and prepare a trial balance		X	X	X	X	X	X	X
* 6	Record adjusting journal entries		X	X	X	X	X	X	X
* 7	Record closing journal entries		X	X	X	X	X	X	X
* 8	Prepare a post-closing trial balance		X	X	X	X	X	X	X
	DUTY E -- Prepare Payroll Records and Related Documents								
* 1	Develop employee earnings records for each employee		X	X	X	X	X	X	X

TASK LISTING BY DOT CODE

OCCUPATIONAL AREA (POST-SECONDARY)

ACCOUNTING

RELATED SECONDARY CLUSTER BUSINESS EDUCATION

DUTY _____

*DENOTES SECONDARY EXPECTANCY

TASK NO.	TASK NAME	POSSIBLE EXIT POINTS						
		DOT DESCRIPTION	ACCOUNTING CLERK	BOOKKEEPER I	PAYROLL CLERK	COST CLERK	INVENTORY-AUDIT CLERK	ACCOUNTS PAYABLE CLERK	ACCOUNTS RECEIVABLE CLERK
		DOT NO.	216.482-010	210.382-014	215.482-010	216.382-034	210.382-010	216.482-010	216.482-010
* 2	Calculate employee earnings		X	X	X	X	X	X	X
* 3	Determine all payroll deductions		X	X	X				
* 4	Complete the earnings records and payroll register		X	X	X				
* 5	Prepare journal entries for a payroll and payroll taxes		X	X	X				
* 6	Prepare Federal tax deposits		X	X	X				
* 7	Prepare quarterly tax returns		X	X	X				
* 8	Prepare unemployment tax return		X	X	X				
* 9	Prepare W-2 forms for employees		X	X	X				
* 10	Prepare payroll checks for employees		X	X	X				
	DUTY F -- Maintain an Accounts Payable Ledger								
* 1	Open an accounts payable ledger with accounts for each creditor		X	X				X	X
* 2	Post credit purchase invoices and account payment receipts to the accounts		X	X				X	X
* 3	Record discounts allowable on invoice.		X	X				X	X
4	Maintain a voucher filing system		X	X				X	X
* 5	Prepare a schedule of accounts payable		X	X				X	X

TASK LISTING BY DOT CODE

OCCUPATIONAL AREA (POST-SECONDARY) ACCOUNTING

RELATED SECONDARY CLUSTER BUSINESS EDUCATION

DUTY _____

*DENOTES SECONDARY EXPECTANCY

TASK NO.	TASK NAME	POSSIBLE EXIT POINTS
		DOT NO.
		DOT DESCRIPTION
	DUTY G -- Maintain Records for Cash Receipts and Cash Disbursements	
* 1	Record journal entries in a cash receipts and cash disbursements journal	
* 2	Foot and crossfoot the cash receipts and cash disbursements journals	
* 3	Post the cash receipts and cash disbursements journals to the general ledger accounts	
* 4	Post the cash receipts and cash disbursements journals to the accounts receivable and accounts payable ledgers	
* 5	Write receipts for cash payments	
* 6	Reconcile the bank statement	
* 7	Prepare deposit slips	
* 8	Write checks to pay company bills	
* 9	Maintain checking accounts	
* 10	Maintain a petty cash fund	
	DUTY H -- Maintain Inventory Control Records	
* 1	Develop inventory cards for each item	
* 2	Record additions and subtractions to each inventory card	

DOT NO.	DOT DESCRIPTION	TASK NO.	TASK NO.	TASK NO.	TASK NO.	TASK NO.	TASK NO.	TASK NO.
216.482-010	ACCOUNTING CLERK		X	X				X	X
210.382-014	BOOKKEEPER I		X	X				X	X
215.482-010	PAYROLL CLERK								
216.382-034	COST CLERK						X		
210.382-010	INVENTORY-AUDIT CLERK						X		
216.482-010	ACCOUNTS PAYABLE CLERK		X	X				X	X
216.482-010	ACCOUNTS RECEIVABLE CLERK		X	X				X	X
			X	X				X	X
			X	X				X	X
			X	X				X	X
			X	X				X	X
			X	X				X	X
			X	X				X	X
			X	X				X	X
							X	X	
							X	X	

TASK LISTING BY DOT CODE

OCCUPATIONAL AREA (POST-SECONDARY) ACCOUNTING

RELATED SECONDARY CLUSTER BUSINESS EDUCATION

DUTY _____

*DENOTES SECONDARY EXPECTANCY

TASK NO.	TASK NAME	POSSIBLE EXIT POINTS							
		DOT DESCRIPTION	ACCOUNTING CLERK	BOOKKEEPER I	PAYROLL CLERK	COST CLERK	INVENTORY-AUDIT CLERK	ACCOUNTS PAYABLE CLERK	ACCOUNTS RECEIVABLE CLERK
		DOT NO.	216.482-010	210.382-014	215.482-010	216.382-034	210.382-010	216.482-010	216.482-010
* 3	Take a physical inventory for units and cost of units					X	X		
* 4	Value the inventory using various valuation methods					X	X		
* 5	Develop an inventory reorder system					X	X		
	DUTY I -- Maintain Departmental Expense Records								
* 1	Develop a standard departmental expense allocation sheet for expenses		X	X		X			
* 2	Allocate departmental expenses to allocation sheet		X	X		X			
* 3	Prepare a departmentalized income statement		X	X		X			
* 4	Convert departmental expenses from dollars to common-size percentages		X	X		X			
	DUTY J -- Maintain Cost Accounting Records								
* 1	Develop a system to maintain the flow of manufacturing costs					X			
* 2	Develop and maintain an allocation sheet for manufacturing costs					X			

TASK LISTING BY DOT CODE

OCCUPATIONAL AREA (POST-SECONDARY) ACCOUNTING

RELATED SECONDARY CLUSTER BUSINESS EDUCATION

DUTY _____

*DENOTES SECONDARY EXPECTANCY

TASK NO.	TASK NAME	POSSIBLE EXIT POINTS							
		DOT DESCRIPTION	ACCOUNTING CLERK	BOOKKEEPER I	PAYROLL CLERK	COST CLERK	INVENTORY-AUDIT CLERK	ACCOUNTS PAYABLE CLER	ACCOUNTS RECEIVABLE CLERK
		DOT NO.	216.482-010	210.382-014	215.482-010	216.382-034	210.382-010	216.482-010	216.482-010
* 3	Value inventories for materials, work in process, and finished goods					X			
* 4	Prepare a manufacturing statement					X			

SUMMARY OF MULTIPLE CAREER OPTIONS IN CLERICAL OCCUPATIONS

Secondary	-	File Clerk	206.382-010
		Records Clerk	206.382-022
		Clerk, General	209.562-010
Post Secondary	-	File Clerk	206.382-010
		Records Clerk	206.382-022
		Clerk, General	209.562-010
		Clerk, General Office	219.362-010
		Clerk-Typist	203.362-010
		Clerk-Stenographer	202.362-014

- Task Summary -

File Clerk. Task #'s: A-1-6, C-1-3, C-5-8, E-1, G-4-7, J-6, K-1-5.

Records Clerk. Task #'s: A-1-6, C-1-6, D-1, E-1, F-3-5, G-5-7, J-6-8, K-1-3, K-5.

Clerk, General. Task #'s: A-1-6, B-1-6, C-1-6, D-1-5, E-1-4, F-1-5, G-1-7, J-6-9, K-1-3, K-5.

Clerk, General Office. Task #'s: A-1-3, A-5-6, B-1-3, C-1-6, D-1-4, E-1-4, F-1-5, G-1-7, J-1-9, K-1-5.

Clerk Typist. Task #'s: A-1-3, A-5-6, B-1-3, C-1-6, D-1-4, E-1-4, F-1-5, G-1-4, G-6-7, J-1-7, K-1-3, K-5.

TASK LISTING BY DOT CODE

OCCUPATIONAL AREA (POST-SECONDARY)

CLERICAL

RELATED SECONDARY CLUSTER BUSINESS EDUCATION

DUTY _____

*DENOTES SECONDARY EXPECTANCY

TASK NO.	TASK NAME	POSSIBLE EXIT POINTS: DOT DESCRIPTION	FILE CLERK	RECORDS CLERK	CLERK, GENERAL	CLERK, GENERAL OFFICE	CLERK TYPIST	CLERK STENOGRAPHER	
		DOT NO.	206.382-010	206.387-022	209.562-010	219.362-010	203.362-010	202.362-014	
	DUTY A -- Using Office Filing Systems								
* 1	Sort incoming material according to filing system		X	X	X	X	X		
* 2	File correspondence records and invoices in appropriate file cabinets		X	X	X	X	X		
* 3	Retrieve materials from files		X	X	X	X	X	X	
* 4	Record materials removed from files		X	X	X				
* 5	Trace missing files		X	X	X	X	X	X	
* 6	Type file folder labels		X	X	X	X	X	X	
	DUTY B -- Proofreading								
* 1	Proofread records, forms or letters to be typed				X	X	X	X	
* 2	Verify numerical columns for accuracy using calculator or similar equipment				X	X	X		
* 3	Edit correspondence of others				X	X	X	X	
	DUTY C -- Managing Records								
* 1	Plan record keeping requirements		X	X	X	X			
* 2	Establish and set up a filing system		X	X	X	X			
* 3	Maintain index files		X	X	X	X	X	X	

TASK LISTING BY DOT CODE

OCCUPATIONAL AREA (POST-SECONDARY)
CLERICAL

RELATED SECONDARY CLUSTER BUSINESS EDUCATION

DUTY

*DENOTES SECONDARY EXPECTANCY

TASK NO.	TASK NAME	POSSIBLE EXIT POINTS: DOT DESCRIPTION	FILE CLERK	RECORDS CLERK	CLERK, GENERAL	CLERK, GENERAL OFFICE	CLERK TYPIST	CLERK STENOGRAPHER	
		DOT NO.	206.382-010	206.387-022	209.562-010	219.362-010	203.362-010	202.362-014	
* 4	Establish procedures for the distribution of forms and reports			X	X	X	X		
* 5	Establish procedures for the production and reproduction of forms, reports, and publications		X	X	X	X	X		
* 6	Establish procedures for the distribution of forms and reports		X	X	X	X			
* 7	Design and draft business forms		X						
* 8	Establish a reference library		X						
	DUTY D -- Using Reprographic Equipment/ Collating								
* 1	Copy documents using office duplicating equipment			X	X	X	X		
* 2	Address envelopes using an addressograph				X	X	X	X	
* 3	Collate/combine printed materials				X	X	X		
* 4	Bind/staple collated materials				X	X	X		
	DUTY E -- Office Typing								
* 1	Type indexing information on files		X	X	X	X	X	X	
* 2	Type reports, correspondence, applications				X	X	X	X	
* 3	Address envelopes using a typewriter				X	X	X	X	
* 4	Type wills, statements, checks, or receipts				X	X	X	X	

TASK LISTING BY DOT CODE

OCCUPATIONAL AREA (POST-SECONDARY) CLERICAL

RELATED SECONDARY CLUSTER BUSINESS EDUCATION

DUTY _____

*DENOTES SECONDARY EXPECTANCY

TASK NO.	TASK NAME	POSSIBLE EXIT POINTS	DOT DESCRIPTION	FILE CLERK	RECORDS CLERK	CLERK, GENERAL	CLERK, GENERAL OFFICE	CLERK TYPIST	CLERK STENOGRAPHER	
			DOT NO.	206.382-010	206.387-022	209.562-010	219.362-010	203.362-010	202.362-014	
	DUTY F -- Office Bookkeeping Functions									
* 1	Make bank deposit					X	X	X		
* 2	Receive and record money from customers					X	X	X		
* 3	Purchase office supplies				X	X	X	X		
* 4	Maintain office supply inventory				X	X	X	X		
* 5	Post data in record books				X	X	X	X		
	DUTY G -- Handling Incoming, Outgoing and Interoffice Mail									
* 1	Distribute mail					X	X	X	X	
* 2	Calculate postage rates					X	X	X	X	
* 3	Use ZIP Code directory					X	X	X	X	
* 4	Calculate most efficient means of mailing documents			X		X	X	X		
* 5	Process outgoing letters and packages requiring special handling and/or special rates			X	X	X	X			
* 6	Prepare, update and check mailing list			X	X	X	X	X		
* 7	Stamp mail with time stamp			X	X	X	X	X		
	DUTY H -- Office Communications									
1	Take dictation in shorthand								X	

TASK LISTING BY DOT CODE

OCCUPATIONAL AREA (POST-SECONDARY) CLERICAL

RELATED SECONDARY CLUSTER BUSINESS EDUCATION

DUTY _____

*DENOTES SECONDARY EXPECTANCY

TASK NO.	TASK NAME	POSSIBLE EXIT POINTS						
		DOT NO.	206.382-010	206.387-022	209.562-010	219.362-010	203.362-010	202.362-014
		DOT DESCRIPTION	FILE CLERK	RECORDS CLERK	CLERK, GENERAL	CLERK, GENERAL OFFICE	CLERK TYPIST	CLERK STENOGRAPHER
2	Transcribe letters, reports, and memorandums							X
3	Transcribe letters, reports and memorandums from transcription equipment							X
	DUTY I -- Composing Business Communications							
1	Compose letters to be typed							X
2	Compile information or data for reports and/or speeches							X
3	Compile agenda and minutes of a meeting							X
	DUTY J -- Perform Receptionist Duties							
1	Receive visitors to the office					X	X	X
2	Determine the nature of visitor's business					X	X	X
3	Give appropriate information to visitors					X	X	X
4	Route visitors to appropriate office areas					X	X	X
5	Introduce visitors to staff					X	X	X
* 6	Arrange reception room and coffee service		X	X	X	X	X	X
* 7	Prepare permits for visitors				X	X	X	X
* 8	Record names of visitors on register			X	X	X		
* 9	Make appointments in appointment book				X	X		

TASK LISTING BY DOT CODE

OCCUPATIONAL AREA (POST-SECONDARY) CLERICAL

RELATED SECONDARY CLUSTER BUSINESS EDUCATION

DUTY _____

*DENOTES SECONDARY EXPECTANCY

TASK NO.	TASK NAME	POSSIBLE EXIT POINTS	DOT DESCRIPTION	FILE CLERK	RECORDS CLERK	CLERK, GENERAL	CLERK, GENERAL OFFIC	CLERK TYPIST	CLERK STENOGRAPHER	
			DOT NO.	206.382-010	206.387-022	209.562-010	219.362-010	203.362-010	202.362-014	
	DUTY K -- Maintain Office Equipment									
* 1	Change carbon or fabric typewriter ribbons			X	X	X	X	X	X	
* 2	Clean typewriter			X	X	X	X	X	X	
* 3	Repair minor problems on typewriter			X	X	X	X	X	X	
* 4	Call service personnel to repair equipment						X		X	
* 5	Change paper in copying machines			X	X	X	X	X	X	

SUMMARY OF MULTIPLE
CAREER OPTIONS IN
DATA PROCESSING

Secondary -	In-file Operator	203.362.014
	Terminal Systems Operator	203.362-018
	Data Typist	203.582-022
	Data-Coder Operator	203.582-026
	Keypunch Operator	203.582-030
	Terminal Operator	203.582-054
	Verifier Operator	203.582-070
	Computer Operator	213.362-010
	Computer Peripheral Equipment Operator	213.382.010
	Auxiliary Equipment Operator	213.685-010
Post Secondary -	In-file Operator	203.362.014
	Terminal Systems Operator	203.362-018
	Data Typist	203.582-022
	Data-Coder Operator	203.582.026
	Keypunch Operator	203.582-030
	Terminal Operator	203.582-054
	Verifier Operator	203.582-070
	Computer Operator	213.362-010
	Computer Peripheral Equipment Operator	213.382.010
	Auxiliary Equipment Operator	213.685-010
	Programmer Analyst	012.167-066
	Programmer, Business	020.162-014
	Programmer, Engin. & Scientific	020.167-022
	Programmer, Information Systems	020.187-010
	Programmer, Process Control	020.187-014
	Programmer Detail	219.367-026

- Task Summary -

In-file Operator. Task #'s: A-8, A-10-12.

Terminal Systems Operator. Task #'s. A-4-8, A-10-12, A-14.

Data Typist. Task #'s: A-1, A-3-5, A-8, A-10.

Data Coder Operator. Task #'s: A-1, A-3, A-8, A-10, A-12, A-13.

Keypunch Operator. Task #'s: A-1-10.

Terminal Operator. Task #'s: A-1, A-3, A-7-12, A-14

Verifier Operator. Task #'s: A-1, A-4-5, A-8-10.

Computer Operator. Task #'s: B-1-15.

Computer Peripheral Equipment Operator. Task #'s: A-1-4, A-7-9, A-11-12, A-14-15.

Auxiliary Equipment Operator. Task #'s: B-1-4, B-7-9, B-11-15.

Programmer Detail. Task #'s: D-3, E-9, F-1-8, F-11.

Programmer Process Control. Task #'s" C-3-5, D-1-3, E-2-3, E-5, E-7-9, F-1-8, F-11, G-1-2, G-4, G-7.

Programmer, Information Systems. Task #'s: C-3-5, D-1-3, E-1-5, E-7-9, F-1-11, G-1-2, G-4-11.

Programmer, Engineering & Scientific. Task #'s: C-3-5, D-1-3, E-1-5, E-7-9, F-1-11, G-1-11.

Programmer, Business. Task #'s: C-3-5, D-1-3, E-1-9, F-1-11, G-1-11.

Programmer, Analyst. Task #'s: C-1-5, D-1-4, E-1-9, F-1-11, G-1-11.

TASK LISTING BY DOT CODE

OCCUPATIONAL AREA (POST-SECONDARY)
DATA PROCESSING

RELATED SECONDARY CLUSTER BUSINESS EDUCATION

DUTY _____

*DENOTES SECONDARY EXPECTANCY

TASK NO.	TASK NAME	POSSIBLE EXIT POINTS: DOT DESCRIPTION	IN-FILE OPERATOR	TERMINAL-SYSTEM OPERATOR	DATA TYPIST	DATA-CODER OPERATOR	KEYPUNCH OPERATOR	TERMINAL OPERATOR	VERIFIER OPERATOR
		DOT NO.	203.362-014	203.362-018	203.582-022	203.582-026	203.582-030	203.582-054	203.582-070
	DUTY A -- Data Entry								
* 1	Prepare data entry machine for keying data as specified				X	X	X	X	X
* 2	Prepare program control (auto skipping, duplicating)						X		
* 3	Key data from source documents according to specs				X	X	X	X	
* 4	Verify keyed data			X	X		X	X	X
* 5	Correct errors in keyed data following verification			X	X		X	X	X
* 6	Duplicate data on the data entry machine						X		
* 7	Visually interpret keyed data			X			X	X	
* 8	Utilize operator's manuals		X	X	X	X	X	X	X
* 9	Perform routine machine maintenance						X	X	X
* 10	Perform routine housekeeping duties		X	X	X	X	X	X	X
* 11	Operate CRT (VDT) to record or retrieve data		X	X				X	
* 12	Interpret on-line displayed messages		X	X		X		X	
* 13	Label (externally) data files					X			
* 14	Type commands on computer terminal to enter, store, retrieve or delete data			X				X	

TASK LISTING BY DOT CODE

OCCUPATIONAL AREA (POST-SECONDARY)
DATA PROCESSING

RELATED SECONDARY CLUSTER BUSINESS EDUCATION

DUTY _____

*DENOTES SECONDARY EXPECTANCY

POSSIBLE EXIT POINTS

TASK NO.	TASK NAME	DOT DESCRIPTION	COMPUTER OPERATOR	COMPUTER-PERIPHERAL EQUIPMENT OPERATOR	AUXILIARY EQUIPMENT OPERATOR				
		DOT NO.	213.362-010	213.382-010	213.685-010				
	DUTY B -- Computer and Peripheral Device Operation								
* 1	Utilize job description manuals		X	X	X				
* 2	Prepare machine for operation		X	X	X				
* 3	Monitor operation of machine		X	X	X				
* 4	Mount and position materials		X	X	X				
* 5	Interpret on-line displayed messages		X						
* 6	Communicate with a computer through a console		X						
* 7	Observe equipment to detect malfunctions		X	X	X				
* 8	Report machine malfunction to supervision		X	X	X				
* 9	Determine cause of machine malfunction		X	X	X				
* 10	Record operating and downtime		X						
* 11	Clear unit at end of operating run		X	X	X				
* 12	Remove materials upon job completion		X	X	X				
* 13	Burst and decollate output		X		X				
* 14	Perform routine machine maintenance		X	X	X				
* 15	Perform routine housekeeping duties		X	X	X				

TASK LISTING BY DOT CODE

OCCUPATIONAL AREA (POST-SECONDARY)
DATA PROCESSING

RELATED SECONDARY CLUSTER BUSINESS EDUCATION

DUTY _____

*DENOTES SECONDARY EXPECTANCY

TASK NO.	TASK NAME	POSSIBLE EXIT POINTS						
		DOT DESCRIPTION	PROGRAMMER, DETAIL	PROGRAMMER, PROCESS CONTROL	PROGRAMMER, INFORMATION SYSTEM	PROGRAMMER, PROCESS CONTROL	PROGRAMMER, BUSINESS	PROGRAMMER ANALYST
		DOT NO.	219.367-026	020.187-014	020.187-010	020.167-022	020.162-014	012.167-066
	DUTY C -- Analyzing Programming Problems							
1	Apply shop programming guidelines during program development							X
2	Apply shop programming guidelines in analyzing a program problem							X
3	Design input/output record layouts			X	X	X	X	X
4	Examine existing subroutines for application to a job			X	X	X	X	X
5	Examine existing utility programs for application to a job			X	X	X	X	X
	DUTY D -- Flowcharting Solutions							
1	Develop general logic sequence of program			X	X	X	X	X
2	Prepare detail flowchart for coding program			X	X	X	X	X
3	Prepare detail flowchart for final documentation		X	X	X	X	X	X
4	Prepare system flowchart							X
	DUTY E -- Coding Programs							
1	Adapt programs to process on different computer configurations				X	X	X	X
2	Code applications program			X	X	X	X	X
3	Code parameters to use utility program			X	X	X	X	X

TASK LISTING BY DOT CODE

OCCUPATIONAL AREA (POST-SECONDARY)
DATA PROCESSING

RELATED SECONDARY CLUSTER BUSINESS EDUCATION

DUTY _____

*DENOTES SECONDARY EXPECTANCY

TASK NO.	TASK NAME	POSSIBLE EXIT POINTS						
		DOT DESCRIPTION	PROGRAMMER, DETAIL	PROGRAMMER, PROCESS CONTROL	PROGRAMMER, INFORMATION SYSTEM	PROGRAMMER, ENGINEERING & SCIENTIFIC	PROGRAMMER, BUSINESS	PROGRAMMER ANALYST
		DOT NO.	219.367-026	020.187-014	020.187-010	020.167-022	020 162-014	012.167-06[illegible]
4	Code program for inquiry device				X	X	X	X
5	Code program routine			X	X	X	X	X
6	Select most appropriate language for problem solution							X
7	Develop job control statements for programs			X	X	X	X	X
8	Modify computer program for increased flexibility			X	X	X	X	X
9	Update an existing program with changes		X	X	X	X	X	X
	CODE F -- Testing Programs							
1	Analyze computer input for test run		X	X	X	X	X	X
2	Analyze computer output for accuracy following test run		X	X	X	X	X	X
3	Analyze program for processing economy and efficiency							X
4	Debug program without using computer aids		X	X	X	X	X	X
5	Debug program using computer aids		X	X	X	X	X	X
6	Develop data for use in program testing			X	X	X	X	X
7	Desk check source program for errors prior to assembly		X	X	X	X	X	X
8	Desk check source program for errors after assembly or compilation		X	X	X	X	X	X

TASK LISTING BY DOT CODE

OCCUPATIONAL AREA (POST-SECONDARY)
DATA PROCESSING

RELATED SECONDARY CLUSTER BUSINESS EDUCATION

DUTY _____

*DENOTES SECONDARY EXPECTANCY

TASK NO.	TASK NAME	POSSIBLE EXIT POINTS	DOT DESCRIPTION	PROGRAMMER, DETAIL	PROGRAMMER, PROCESS CONTROL	PROGRAMMER, INFORMATION SYSTEM	PROGRAMMER, ENGINEERING & SCIENTIFIC	PROGRAMMER, BUSINESS	PROGRAMMER ANALYST	
			DOT NO.	219.367-026	020.187-014	020.187-010	020.167-022	020.162-014	012.167-066	
9	Recommend solutions to undesirable conditions discovered during test					X	X	X	X	
10	Consult with user on test output					X	X	X	X	
11	Correct program error using program documentation			X	X	X	X	X	X	
	DUTY G -- Documenting Programs									
1	Define work files				X	X	X	X	X	
2	Develop documentation narrative				X	X	X	X	X	
3	Develop cross reference of all programs in library								X	
4	Develop program job control statements				X	X	X	X	X	
5	Develop program job control statements for job stream					X	X	X	X	
6	Prepare console operator's run book								X	
7	Update documentation for program				X	X	X	X	X	
8	Prepare instructional work sheets for data control			X	X	X	X			
9	Write definition of input/output			X	X	X	X			
10	Write detailed description of data base			X	X	X	X			
11	Prepare user's manual			X	X	X	X			

SUMMARY OF MULTIPLE CAREER OPTIONS IN SECRETARIAL OCCUPATIONS

Secondary	-	Stenographer	202.362-010
		Typist	203.582-066
		Secretary	201.362-030
Post Secondary	-	Stenographer	202.362-010
		Typist	203.582-066
		Secretary	201.362-030
		Administrative Secretary	161.167-014
		Administrative Assistant	161.167-010

- Task Summary -

Stenographer. Task #'s: A-1-3, B-1-7, C-4, D-1, E-1-7, E-10-11, F-1-6, G-6, I-4.

Typist. Task #'s: A-1-3, B-1-6, C-1-19, D-1-3, E-1-11, F-1-6, G-1-7, H-1-9, H-15, I-1-10.

Administrative Assistant or Administrative Secretary. All Tasks.

TASK LISTING BY DOT CODE

OCCUPATIONAL AREA (POST-SECONDARY) SECRETARIAL

RELATED SECONDARY CLUSTER BUSINESS EDUCATION

DUTY

*DENOTES SECONDARY EXPECTANCY

TASK NO.	TASK NAME	POSSIBLE EXIT POINTS: DOT DESCRIPTION	STENOGRAPHER	TYPIST	SECRETARY	ADMINISTRATIVE SECRETARY	ADMINISTRATIVE ASSISTANT		
		DOT NO.	202.362-010	203.582-066	201.362-030	161.167-014	161.167-010		
	DUTY A -- Maintaining Office Supplies								
* 1	Check inventory to determine if minimum quantities of supplies are on hand		X	X	X	X	X		
* 2	Order supplies as needed from suppliers		X	X	X	X	X		
* 3	Prepare requisitions for supplies		X	X	X	X	X		
* 4	Distribute and control office supplies				X	X	X		
* 5	Determine requirements for supplies				X	X	X		
	DUTY B -- Typing Office Communications								
* 1	Type addresses and envelopes and index cards		X	X	X	X	X		
* 2	Type postal cards		X	X	X	X	X		
* 3	Type a business letter in a proper format		X	X	X	X	X		
* 4	Type a memorandum		X	X	X	X	X		
* 5	Type news releases		X	X	X	X	X		
* 6	Type office communications with carbons		X	X	X	X	X		
* 7	Transcribe oral and/or machine dictation		X		X	X	X		
	DUTY C -- Typing Business Forms								
* 1	Type address labels			X	X	X	X		
* 2	Type file labels			X	X	X	X		
* 3	Type fill-in forms			X	X	X	X		
* 4	Type telephone messages		X	X	X	X	X		

TASK LISTING BY DOT CODE

OCCUPATIONAL AREA (POST-SECONDARY) SECRETARIAL

RELATED SECONDARY CLUSTER BUSINESS EDUCATION

DUTY _____

*DENOTES SECONDARY EXPECTANCY

TASK NO.	TASK NAME	POSSIBLE EXIT POINTS: DOT DESCRIPTION	STENOGRAPHER	TYPIST	SECRETARY	ADMINISTRATIVE SECRETARY	ADMINISTRATIVE ASSISTANT		
		DOT NO.	202.362-010	203.582-066	201.[illegible]30	161.167-014	169.167-010		
* 5	Type purchase requisitions			X	X	X	X		
* 6	Type purchase orders			X	X	X	X		
* 7	Type invoices			X		X	X		
* 8	Type bills of lading			X		X	X		
* 9	Type credit memoranda			X		X	X		
* 10	Type statements of account			X		X	X		
* 11	Type voucher checks			X	X	X	X		
* 12	Type mortgages			X	X	X	X		
* 13	Type wills			X	X	X	X		
* 14	Type power of attorney			X	X	X	X		
* 15	Type sales agreements			X	X	X	X		
* 16	Type endorsements			X	X	X	X		
* 17	Type contracts			X	X	X	X		
* 18	Type government forms and reports			X	X	X	X		
* 19	Type alphabetic and numeric roster			X	X	X	X		
	DUTY D -- Performing Reprographic Functions								
* 1	Prepare masters and/or originals to be duplicated		X	X	X	X	X		
* 2	Duplicate masters and/or originals on appropriate equipment (duplication machines)			X	X	X	X		
* 3	Collate copies for distribution			X	X	X	X		

TASK LISTING BY DOT CODE

OCCUPATIONAL AREA (POST-SECONDARY) SECRETARIAL

RELATED SECONDARY CLUSTER BUSINESS EDUCATION

DUTY _____

*DENOTES SECONDARY EXPECTANCY

TASK NO.	TASK NAME	POSSIBLE EXIT POINTS: DOT DESCRIPTION	STENOGRAPHER	TYPIST	SECRETARY	ADMINISTRATIVE SECRETARY	ADMINISTRATIVE ASSISTANT		
		DOT NO.	202.362-010	203.582-066	201.362-030	161.167-014	169.167-010		
	DUTY E -- Performing Receptionist Functions								
* 1	Receive visitors		X	X	X	X	X		
* 2	Determine the nature of visitor's business		X	X	X	X	X		
* 3	Give appropriate information to visitors		X	X	X	X	X		
* 4	Route visitors to appropriate office areas		X	X	X	X	X		
* 5	Make introductions		X	X	X	X	X		
* 6	Take oral messages from visitors		X	X	X	X	X		
* 7	Arrange reception room and coffee service		X	X	X	X	X		
* 8	Conduct tours of business				X	X	X		
* 9	Keep an appointment book				X	X	X		
* 10	Keep a register of visitors		X	X	X	X	X		
* 11	Handle telephone calls		X	X	X	X	X		
	DUTY F -- Communicating Orally by Telephone								
* 1	Answer incoming calls		X	X	X	X	X		
* 2	Transfer incoming calls		X	X	X	X	X		
* 3	Answer telephone inquiries		X	X	X	X	X		
* 4	Record and deviver telephone messages		X	X	X	X	X		
* 5	Place outgoing calls (local & long distance)		X	X	X	X	X		
* 6	Take dictation over the telephone		X	X	X	X	X		

TASK LISTING BY DOT CODE

OCCUPATIONAL AREA (POST-SECONDARY) SECRETARIAL

RELATED SECONDARY CLUSTER BUSINESS EDUCATION

DUTY _____

*DENOTES SECONDARY EXPECTANCY

TASK NO.	TASK NAME	POSSIBLE EXIT POINTS							
		DOT DESCRIPTION	STENOGRAPHER	TYPIST	SECRETARY	ADMINISTRATIVE SECRETARY	ADMINISTRATIVE ASSISTANT		
		DOT NO.	202.362-010	203.582-066	201.362-030	161.167-014	169.167-010		
	DUTY G -- Scheduling Events for Others								
* 1	Make conference and meeting arrangements				X	X	X		
* 2	Make, change, or cancel appointments				X	X	X		
* 3	Process registration for conference participants				X	X	X		
* 4	Make travel arrangements				X	X	X		
* 5	Make hotel/motel reservations				X	X	X		
* 6	Prepare iteneraries		X		X	X	X		
* 7	Prepare agenda for meetings				X	X	X		
	DUTY H -- Handling Office Bookkeeping Functions								
* 1	Manage petty cash fund				X	X	X		
* 2	Prepare bank deposits				X	X	X		
* 3	Check accuracy of source documents and reports				X	X	X		
* 4	Record data for financial statements				X	X	X		
* 5	Check figures on statements				X	X	X		
* 6	Prepare purchase orders, invoices, vouchers, or receipts			X	X	X	X		
* 7	Reconcile bank statements			X	X	X	X		
* 8	Compute payroll for employees				X	X	X		
* 9	Compute payroll information				X	X	X		

TASK LISTING BY DOT CODE

OCCUPATIONAL AREA (POST-SECONDARY) SECRETARIAL

RELATED SECONDARY CLUSTER BUSINESS EDUCATION

DUTY _____

*DENOTES SECONDARY EXPECTANCY

TASK NO.	TASK NAME	POSSIBLE EXIT POINTS							
		DOT NO.	202.362-010	203.582-066	201.362-030	161.167-014	169.167-010		
		DOT DESCRIPTION	STENOGRAPHER	TYPIST	SECRETARY	ADMINISTRATIVE SECRETARY	ADMINISTRATIVE ASSISTANT		
10	Compute payroll tax returns					X	X		
11	Calculate accounts payable from source documents					X	X		
12	Calculate accounts receivable from source documents					X	X		
13	Prepare billings for accounts receivable					X	X		
14	Process sales documents, such as salesman's orders, and written requests					X	X		
* 15	Prepare payments from such documents as invoices, statements and vouchers				X	X	X		
	DUTY I -- Maintaining Office Files								
* 1	Plan record keeping requirements			X	X	X	X		
* 2	Establish and set up a filing system			X	X	X	X		
* 3	Locate documents in an alphabetic file			X	X	X	X		
* 4	Refile documents that have been removed		X	X	X	X	X		
* 5	Maintain a geographic filing system			X	X	X	X		
* 6	Maintain a numeric filing system			X	X	X	X		
* 7	Maintain a subject filing system			X	X	X	X		
* 8	Cross-reference documents			X	X	X	X		
* 9	Maintain index file			X	X	X	X		
* 10	Maintain "tickler" files			X	X	X	X		

APPENDIX A

OVERVIEW OF COMPETENCY-BASED EDUCATION

Occupational or task analysis is a fundamental process used to develop competency-based systems of vocational instruction. The following is an overview of CBI.

Today educators once more are wondering how to respond to current societal demands. One of the strongest demands is for accountability. Parents and students wonder, "What really are our teachers teaching?" "What should students be learning?" and "What should our teachers be teaching?" Out of these demands, competency-based instruction (CBI) has emerged.

Simply defined, competency-based instruction is a systematic approach to instruction, aimed at accountability, based on job-derived standards, and supported by a feedback mechanism. As such, it has certain basic components. The five major components in a competency-based learning system are (1) competencies, (2) performance objectives, (3) criterion-referenced tests, (4) delivery systems, and (5) program evaluation. Each is interrelated, and together they form the basis of a program that provides for accountability and systematic process for adjusting the program to provide for changing needs.

Identification of Competencies

Competencies are the knowledge, skills, attitudes, and judgments that will be demonstrated at a pre-determined level of proficiency before a student is recommended as a graduate of a specific program. Competencies grow out of

the needs of individual students, employers, the community and society, and they provide evidence of the application of knowledge, skill, and judgment in one's daily life. They give direction to the development of courses or units of learning; they are the unifying factor among courses; in a program they prescribe the development of performance objectives for each course.

Performance Objectives

Performance objectives are statements of educational intent that indicate the behaviors a student will demonstrate upon successful completion of a learning experience. They describe precisely what students should do to pass a module, unit, course of instruction or competency check.

Criterion-Referenced Testing

Criterion-referenced testing is the process of measuring the learner's performance as described in a performance objective and evaluating the learner as indicated in the same objective. Criterion referenced tests are written before you begin instruction. You may use them to allow students to exempt all or part of a course. They may also be used to provide students with an orientation to a course. Criterion-referenced tests permit students to know at the beginning of the course exactly what and how they will accomplish specified objectives to complete the course successfully.

Learning Strategies or Delivery Systems

A learning strategy is the process of structuring effective learning situations which will enable students to

achieve specified performance objectives. Therefore, in a competency-based program, the emphasis in each learning activity, teaching strategy, or "method" is directed toward helping students to learn a pre-specified objective. One of the major research findings on teaching and learning is that a variety of materials, processes, and learning modes works better for most learners than using a single process for each individual or for a class.

Follow-up and Evaluation

Follow-up is the procedure used to increase or reinforce the effectiveness of previous action. There are no "unique" processes that have been developed to be used exclusively in a competency-based program for follow-up and evaluation. The design of program evaluation, however, should consist of at least two processes: (1) gathering formative evaluation data periodically from students and faculty, and (2) following up students as they demonstrate competencies on the job.

Implementing a CBI System

In order to incorporate the principles of competency-based instruction into a vocational course or program, certain activities must be accomplished. The following chart presents a development model. (The preceding overview was developed from the article by Calhoun (1979) cited in the bibliography, by permission of the author.)

Phase 1: Determine Content	Phase 2: Plan for Instruction	Phase 3: Implement Instruction
1.1. Determine occupational tasks	2.1. Develop enabling objectives and measures	3.1. Develop lesson plans
1.2. Analyze tasks	2.2. Specify supporting skills and knowledges	3.2. Select/develop student materials
1.3. Develop performance objectives	2.3. Select methods and media	3.3. Conduct mainstream validation
1.4. Develop criterion-referenced measures	2.4. Plan student activities	3.4. Adapt validated instruction to special needs
1.5. Organize instructional sequence		3.5. Set up system of accountability

The model above contains a summary of those activities necessary for complete development of competency-based instruction in vocational programs. Modification of existing programs will not necessarily require completion of all activities, since some might have already been accomplished. It is the purpose of this Curriculum Development Guide for competency based instruction, to define the portion of the developmental model above which is essentially research based. That is, the determination and developing of tasks performed by workers actively employed in a particular occupation.

Description of Phase 1 Activities

The first phase consists of five major activities, the end product of which is an organized instructional sequence. This phase is addressed by material contained in this book.

Phase 1.1 and 1.5 have been accomplished herein. Supplementary documents contain phases 1.2, 1.3, and 1.4 for selected programs only.

1.1 Determine Occupational Tasks

Occupational tasks are derived from research conducted within a specific occupation. Such research involves analyzing each occupation to determine its duties and tasks, surveying large numbers of workers to determine exactly what they are doing, and then deciding on that basis what should be included in the training.

1.2 Analyze Tasks

Once the needs of an occupation have been clearly stated in research-based tasks, each task is then further analyzed. This analysis, conducted through literature study, interviews, observations and other research procedures, is done to determine the major steps and procedures which make up each task as well as the conditions under which it is performed and the equipment it requires.

1.3 Develop Performance Objectives

Each analyzed task is next translated into a performance objective which specifies exactly what the student will do as a result of the instruction, the conditions under which it will be done, and the standard of proficiency to be achieved.

1.4 Develop Criterion-Referenced Measures

For each performance objective, a measure is written which required the student to perform what is specified in each objective. This criterion-referenced measure

enables the teacher to evaluate the student's performance according to the objective's standard. It also provides the instrument for validation of the instruction.

1.5 Organize Instructional Sequence

Since an occupational analysis includes a broad area of duties and tasks, each instructional program must be tailored to meet specific training requirements set up by instructional, regional or local demand. The specific instructional requirements, then, can be selected from the tasks and objectives and arranged into the desired teaching sequence.

APPENDIX B

THE RELATIONSHIPS OF DUTIES, TASKS, PERFORMANCE OBJECTIVES, AND CRITERION REFERENCED MEASURES

The following will identify the relationships between the various elements (duties, tasks, performance objectives, and criterion referenced measures) of a competency-based instructional sequence.

DUTY: Operating Grinding Machines

A duty is one of the distinct major activities involved in a job performance. It consists of a collection of related tasks accomplished by the job incumbent. The duty statement begins with an action work, most commonly the gerund (ing) form of a verb. An object or function is used with these words, i.e., "Typing office communications," "Inspecting brake systems," etc.

Suggested Uses of Duty Statements

1. Use as a basis for a functional organization of your program. It is often advantageous to organize a program in terms of what is done on the job. Since duty areas state major job activities, they can be readily grouped into clusters, blocks or large units.

2. Use to state general goals or competencies. When a program is being organized in terms of generally stated goals or competencies, the duty statements can be used to state them. Such statements encompass groupings of more specific competencies. Thus, they are used for structural purposes only.

3. Use as a guide for negotiating the work areas for cooperative training. With a list of duty statements, the coordinator can use this as a "shopping guide" to negotiate the work areas for a cooperative training plan. With the major work areas determined, they can then proceed to the specific tasks involved.

TASK: Attach and align materials for grinding operation

A task is a unit of work activity which constitutes a significant part of a duty. A combination of tasks forms logical work steps necessary to perform a duty. A task has a definite beginning and ending point in its accomplishments and generally consists of two or more definite steps.

Suggested Uses of Task Statements

1. Identify the lessons or other instructional increments within a functional organization. When a program has been organized by duty statements, the statements, arranged in the desired sequence under each duty, can be used to outline the specific lessons under each functional unit.

2. State specific competencies. If a program is organized (or being organized) in terms of competencies, the task statements may be used to state the specific competencies when duty statements are used to identify the general competencies.

3. Record student progress. Task statements may be entered on the students' progress records to reflect exactly what each student has (or has not) achieved.

4. Specify tasks for a cooperative training plan.

5. Use to certify training. If a certificate is awarded upon completion of the program (or any significant part of it) the task statement may be used to check off what each student has actually accomplished. Prospective employers, therefore, can be shown meaningful records of the students' training.

PERFORMANCE OBJECTIVE:

69. PERFORMANCE OBJECTIVE

[1]Given a diamond point dressing tool, work-holding device, dial indicator, [2]feeler gauge, and micrometer caliper, attach and align materials for general or cylindrical grinding/ [3]polishing.
Tolerance for alignment must be
+0.001"
-0.001"

A PERFORMANCE OBJECTIVE contains the following components: (1) the condition under which the student will perform, (2) the performance required of the student, and (3) a job-relevant standard for measuring successful performance of the objective. These components are illustrated above.

Suggested Uses of Performance Objectives

Performance objectives are terminal objectives; that is, they specify how and how well the student is expected to perform the tasks after the instruction. In themselves, they are not curriculum, but they can be used in revising existing curriculum or in developing new programs. Following are some of the ways in which they can be used.

1. Match with the specific goals or competencies stated in an existing program. In many programs, the intended outcomes for each unit or other division are stated as goals or competencies. For example, a goal might be stated as "Develop proficiency in cutting and shaping hari." From the catalog, then, all performance objectives dealing with shaping and cutting hair could be selected to specify the desired proficiencies.

2. Compare with existing objectives. Since much work has already been done in performance-based instruction, some programs will already have some performance objectives. Existing objectives can be edited, brought up to date or replaced by comparing them with the instructor-developed objectives.

3. Match with the identified needs for a new program. When a new program is planned it is usually based on a local needs analysis involving local business and industry, advisory committees, craft committees, instructors, workers and supervisors. The needs analysis, when completed, will indicate the specific job skills to be developed in the new program. The performance objectives (along with the tasks) can be matched with those identified skills to provide terminal objectives for the new program.

4. Use as the basis for updating and revising existing instruction. When instruction is revised, a starting point is the performance objectives. Since each performance objective specifies a terminal competency, the instruction should support it in terms of knowledges and skills to be

taught, methods to be employed and the media and resources to be used. Because they are based on valid research, performance objectives can provide a solid basis from which to revise instruction.

5. Use to negotiate the proficiency requirements for training plans in cooperative education. When the coordinator and employer have mutually selected duty areas and tasks to be developed on the job, they can then use the objectives to specify the required proficiencies.

CRITERION-REFERENCED MEASURE:

> CRITERION-REFERENCED MEASURE
>
> Go to the general or cylindrical grinder and attach and align the holding devices and materials provided. Tolerance for alignment: $\frac{+0.001"}{-0.001"}$

Following the performance objective is a CRITERION-REFERENCED MEASURE. This is usually written in the form of an imperative statement to the student stating what is to be done. Its purpose is to measure the performance stated in the Performance Objective.

Suggested Uses of Criterion-Referenced Measures

1. Measure student achievement. The primary purpose of the criterion-referenced measure is to measure each student's achievement. This is accomplished by requiring the student to do what is specified in the objective.

2. Measure the effectiveness of existing instruction. When instruction for a task has been given, administer the

criterion-referenced measure to each student. Results of the measure will indicate any weaknesses and the necessary revisions.

3. Validate new instruction. When instruction has been developed or revised, the administration of the criterion-referenced measures will measure the instruction's effectiveness.

4. Use to advance students who demonstrate proficiency. Students with prior experiences should be so placed in the program to take advantage of that prior experience. Administration of the criterion-referenced measures before the instruction will make it possible to advance those students who demonstrate proficiency.

(Examples of tasks and related performance objectives and criterion-referenced measures may be found in the V-TECS material and in supplementary documents procedured by the Task Linkage Project.)

APPENDIX C

UNDERSTANDING DUTIES, TASKS AND PROCEDURAL STEPS IN COMPETENCY-BASED INSTRUCTION

The material contained in this document is a delineation of duties and tasks performed in various occupations. In utilizing these lists the terms duty, task, and step often have conflicting and ambiguous meanings for various users. Perhaps the best way to understand this relationship is by utilizing an example which will be familiar to most groups who work with this material. The illustration given below is for the job of classroom teacher.

A duty is a broad area of functional responsibility. Duties are performed through a series of tasks. A classroom teacher might have the following duties. (Remember these divisions reflect personal judgments).

A. Planning and organizing instruction

B. Presenting classroom instruction

C. Maintaining student records

D. Performing administrative activities

E. Performing purchasing functions

F. Performing extra-curricular duties

G. Participating in professional growth development activities

H. Maintaining classroom environment

Tasks associated with Duty A (above) might be as follows sequenced in order most likely performed:

A. Planning and Organizing Instruction

1. Prepare course outline

2. Prepare specific performance objectives

4. Prepare instructional methods for each objective

5. Develop a student measure for each course objective

6. Select appropriate materials and media

7. Develop instructional sequence for lesson presentation

8. Develop and write down daily lesson plans

9. Develop specific instructions for individual students as needed

Tasks are performed through a series of procedural steps. Procedural steps associated with Task A-1 might be:

A. 1. Prepare course outline

   a. Review other courses

   b. Decide on student needs

   c. Review available resources and material

   d. Consult with instructional supervisor

   e. Write down basic points to be covered

(These procedural steps are often called task detailing, and are not developed for tasks in this publication.)

These examples are designed to show that Duties and Tasks are simply methods for quantifying and stating units of work activity. As can be noted, the components which make up these units require the input of much professional judgment. No means of division are necessarily right or wrong. The best lists of this type are those which accurately and completely describe the work that is done on the job. Another

way of saying this is that a good task list consists of those things you could observe a worker doing if you followed him/her around for a while on his/her job! This would include things done often, and things done seldom, but would be very descriptive of the actions performed by the worker.

As you can see, a task list is an action document. It is a document which specifically states to a student or an employer exactly what gets done and by whom, in the work environment.

APPENDIX D

COMPLETERS, LEAVERS AND THE CONCEPT OF MULTIPLE CAREER OPTIONS-RATIONALE

As may be interpreted from the attached federal regulations, the notion of program completer versus program leaver is tied directly to the career objective stated or implied by the student. Vocational programs are required to report a student as a leaver if a planned program leading to a career objective is not completed. Each multiple option in this document constitutes such an objective. If a student leaves after the completion of any one of these options it may at least be implied that the objective has been met. The concept of multiple career options based on a task analysis provides the validation necessary for organizing a curriculum which allows students to elect to take only a portion of an instructional sequence and still be a program completer by federal guidelines. It also allows for a program which is responsive to the unique interests, aptitudes, abilities, and time investment of individual students. An extremely important impact of such an organization is its effect upon the needs of special populations and the problems associated with setting the admission policies to vocational programs for these students which allow for their limitations without transgressing upon their abilities. The task listings which are included in this publication indicate possible exit points in these programs and the tasks necessary to reach each level. The user is encouraged to read the enclosed federal guidelines carefully and to develop a curriculum which allows students to complete at least one occupational objective or exit point within a reasonable period of time after beginning the program.

DEFINITIONS - FEDERAL

PROGRAM:

Is defined as a planned sequence of courses, services, or other educational activities designed to meet a specific VOCATIONAL OBJECTIVE.

VOCATIONAL OBJECTIVE:

Vocational objective is the intended occupational outcome of training and other preparation as stated by the individual student or implied.

COMPLETION: (Completed Program)

Means a student who finished a planned sequence of courses, services, or activities designed to meet a vocational occupational objective and which purports to teach entry-level job skills.

LEAVER:

LEAVERS Means anyone who has (1) been enrolled and has attended a program of vocational education and has left the program voluntarily before its formal completion because they have acquired sufficient entry-level skills to work in the field, and who have taken a job related to their field of training; and (2) all other leavers.

REPORTING:

Report these persons by race/ethnic group by sex, level of completion, handicap and by head count for persons who --

1) Completed more than 50% of program in which enrolled.

2) Completed 50% or less of program in which enrolled.

APPENDIX E

MODEL FOR CURRICULUM ORGANIZATION

The accompanying model illustrates graphically a design for incorporating the task-based, multiple exit point curriculum into a high school cluster program. This model contains the following essential elements:

1. At least one-quarter introductory class (one hour block is preferable) to orient the student to the training domain and to begin the development of basic knowledge and skill.

2. A student-teacher counseling session in which the student selects an option within the cluster which has the greatest potential for him/her.

3. The entry of the student into a specific task-based learning sequence which leads to identified job titles within an option available to the cluster.

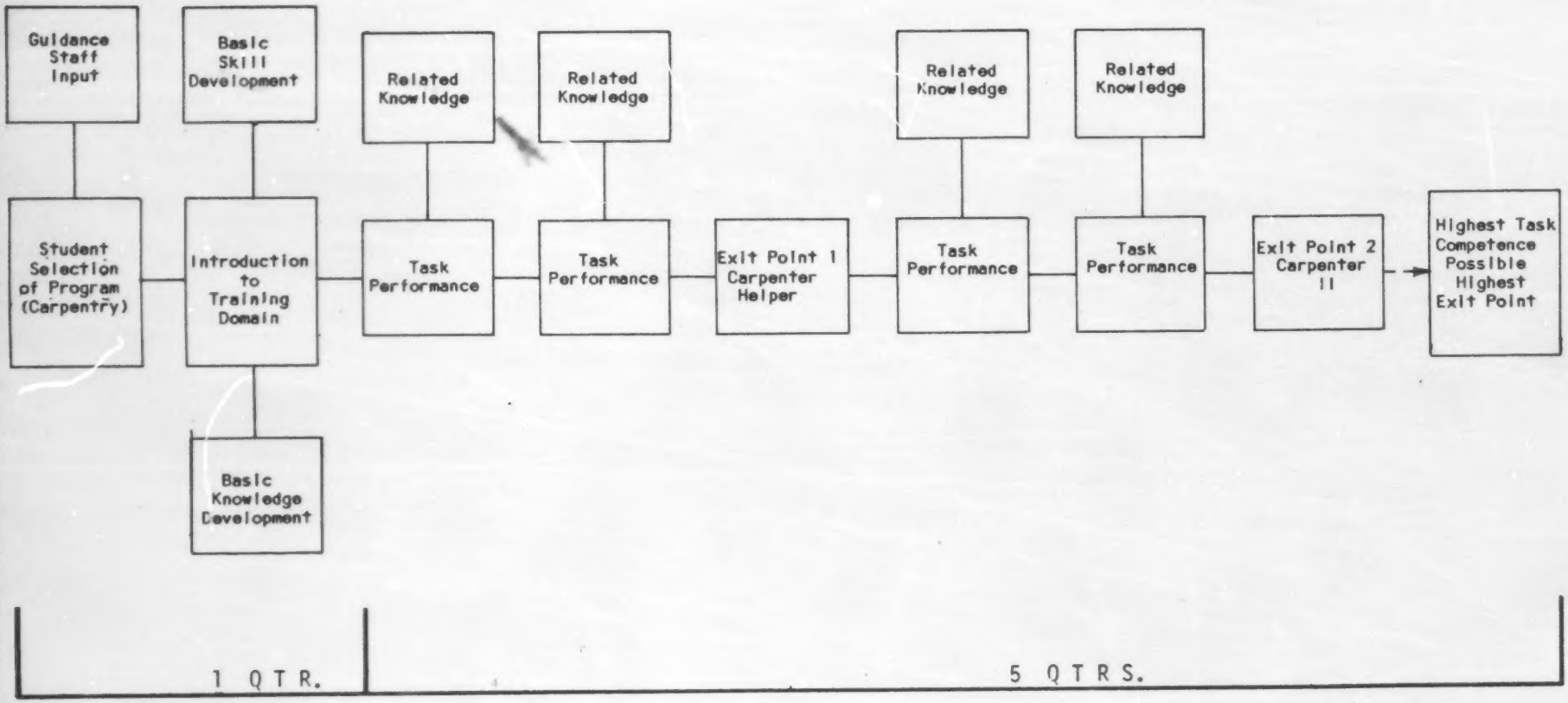
4. The provision that the student remain in the selected option until he/she completes tasks and related knowledge competence necessary for at least one of the identified exit points.

5. The option at the completion of any exit point to either: (a) continue along the same track to the limit that he/she is able to reach given his/her own investment of time, ability, and effort. (Equipment and materials limitations might play a role in setting this limit within a given program); (b) elect another option within the cluster and pursue it until a desired level of competence is reached; or (c) drop the program as a completer and enter either the job market or another training area.

The post-secondary training model also illustrated graphically, differs only in the sense that the student decides before entry which specialized program he/she wishes to ener, and progresses through a task-based system designed to develop the highest exit point competency possible. This sort of program is not concerned with clusters of occupations, but does utilize a series of multiple career options (exit points) within its training domain.

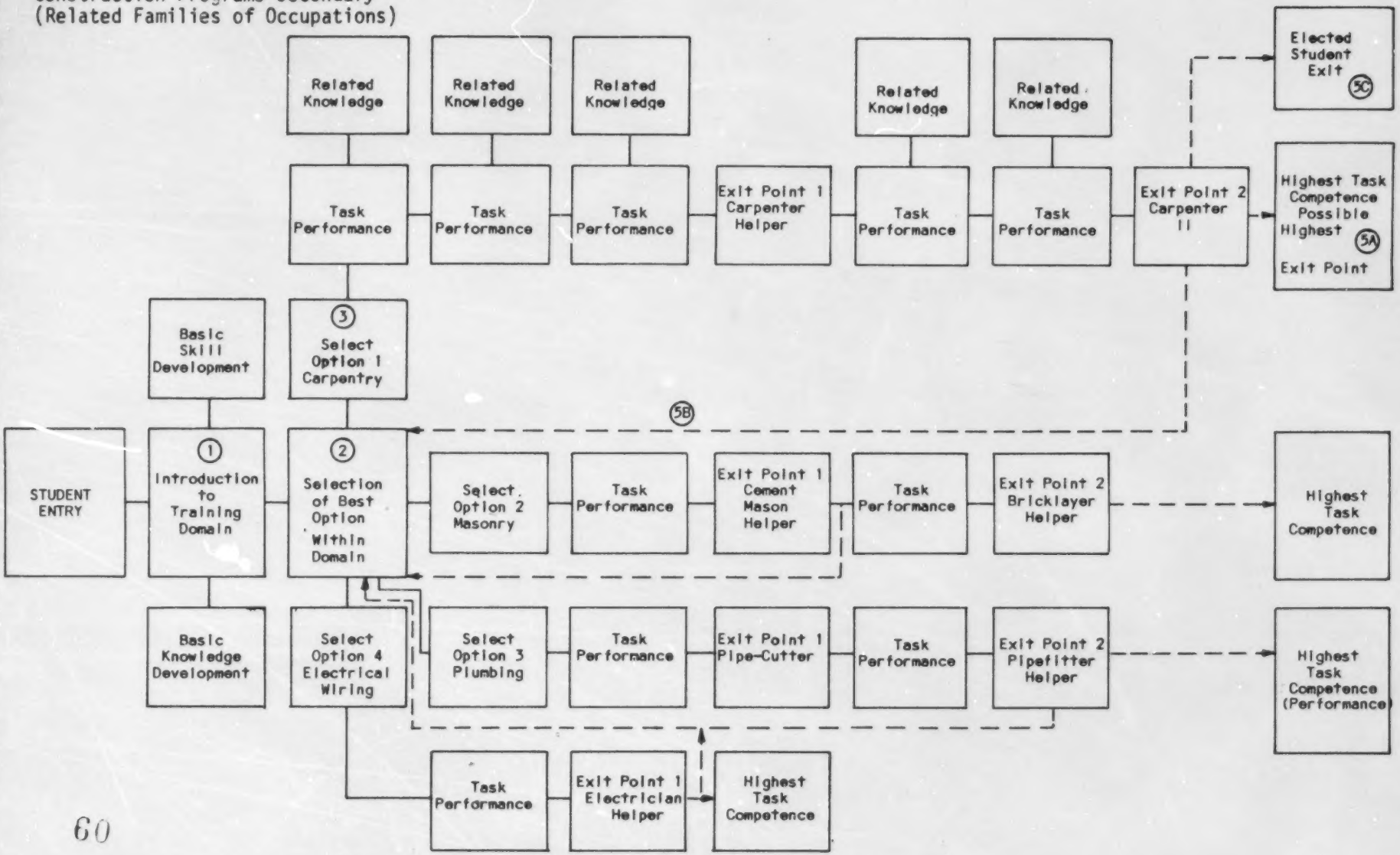
SYSTEMS DESIGN FOR TASK BASED INSTRUCTION

Specialized Post-Secondary Program
(Carpentry)



SYSTEMS DESIGN FOR TASK BASED INSTRUCTION

Construction Programs Secondary
(Related Families of Occupations)



APPENDIX F

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The following materials were obtained from the Vocational-Technical Education Consortium of States, Southern Association of Colleges and Schools and were used as background data for this project:

Appliance Repairer
Auto Body Repairer
Auto Mechanic
Bank Teller
Bookkeeper
Bricklayer
Carpenter
Cashier/Checker
Computer Operator
Computer Programmer
Cosmetologist
Dental Assistant
Dental Laboratory Technician
Die, Jig and Fixture Designer
Diesel Mechanic
Drafter
Electronic Technician
Emergency Medical Technician
Legal Secretary
Licensed Practical Nurse
Machinist
Medical Assistant
Medical Lab Technician
Plumber
Printer
Radio/TV Repairer
Radiographer
Secretary
Small Engine Repairer
Welder